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10/014,392	10/22/2001	Johannes J. Verboom	18504/333	1059

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EXAMINER

TORRES, JOSEPH D

ART UNIT PAPER NUMBER

2133

DATE MAILED: 08/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/014,392

Applicant(s)

VERBOOM, JOHANNES J.

Examiner

Joseph D. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 02/12/2002.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. 8/17/2004.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "14" has been used to designate both a read/write head on page 9 and a RESYNC field in Figure 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: read/write head '14' on page 9 and '216' on page 16. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in

the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: '40' in Figure 1; and '70' in Figure 5. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The abstract of the disclosure is objected to because 'reference' in line 3 and 'optimum' in line 9 are misspelled. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 recites, "data is stored on the storage media such that it **can be** arranged in a virtual matrix to allow for further error correction operations, and wherein the reference fields are arranged as a plurality of columns within the virtual matrix". The term "can be" is indefinite. Note: data can always be arranged in a virtual matrix to allow for further error correction operations, and wherein the reference fields are arranged as a plurality of columns within the virtual matrix.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 10, 13, 14, 16, 17, 19, 20, 22, 23, 26 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroda; Kazuo et al. (US 5875163 A, hereafter referred to as Kuroda).

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35 U.S.C. 102(b) rejection of claims 1 and 3.

Kuroda teaches interleaving the data with a plurality of reference fields, each reference field including a defined data pattern; storing the interleaved data such that the reference fields are at predetermined locations (Figure 2 in Kuroda teaches pre-information data stored periodically interleaved within sector data; hence the pre-information data taught in the Kuroda patent is a periodic reference field interleaved within sector data and placed at predetermined locations in a sector; col. 4, lines 65-67 in Kuroda teaches that the periodic pre-information reference field of Figure 2 comprises address information indicative of a write position; Note: address information indicative of a write position is a defined pattern, hence Kuroda teaches that each periodic pre-information reference field including a defined address information pattern); upon demand, retrieving the interleaved data; analyzing the retrieved interleaved data by testing the retrieved reference field to determine if the retrieved reference field meets a predetermined shape condition and a predetermined amplitude condition (Phase Comparing Circuits 14 & 15 and Amplitude Phase Equalizing Circuits 16 and 17 in Figure 4 of Kuroda are a means for determining if the retrieved periodic pre-information reference field meets a predetermined shape condition and a predetermined amplitude condition; Note: phase and amplitude determine the shape of a digital pulse); and determining whether readout errors have been encountered based upon the results of the interleaved data analysis (Figure 4 in Kuroda teaches a Pre-Pit Signal Reproducing Circuit 11 and a Sync Pre-Signal Detector 12 for reproducing and analyzing the periodic pre-information reference field of Figure 2 in order to update operating parameters SPD,

SPD1 and SPD2 for controlling rotational parameter SC; SC in Figure 4 is a rotational control parameter indicative of possible errors that exist in the periodic pre-information reference field data as it deviates from a reference signal generated by Reference Signal Generator 13 in Figure 4, hence the device taught in Figure 4 of Kuroda is used to analyze errors in retrieved the periodic pre-information reference field data to update operating parameters as a result of the analysis).

35 U.S.C. 102(b) rejection of claim 10.

The term “can be” is indefinite. Note: data can always be arranged in a virtual matrix to allow for further error correction operations, and wherein the reference fields are arranged as a plurality of columns within the virtual matrix.

35 U.S.C. 102(b) rejection of claims 13 and 22.

Kuroda teaches storing data on a storage media such that periodic reference fields are interleaved within the data and placed at predetermined locations in a sector (Figure 2 in Kuroda teaches pre-information data stored periodically interleaved within sector data; hence the pre-information data taught in the Kuroda patent is a periodic reference field interleaved within sector data and placed at predetermined locations in a sector), each reference field including a defined pattern (col. 4, lines 65-67 in Kuroda teaches that the periodic pre-information reference field of Figure 2 comprises address information indicative of a write position; Note: address information indicative of a write position is a defined pattern, hence Kuroda teaches that each periodic pre-information

reference field including a defined address information pattern); and using the periodic reference bytes to update a plurality of operating parameters of the read channel (Figure 4 in Kuroda teaches a Pre-Pit Signal Reproducing Circuit 11 and a Sync Pre-Signal Detector 12 for reproducing and analyzing the periodic pre-information reference field of Figure 2 in order to update operating parameters SPD, SPD1 and SPD2 for controlling rotational parameter SC) and to provide a reference field status byte indicative of possible errors that exist in the data and to analyze errors (SC in Figure 4 is a rotational control parameter indicative of possible errors that exist in the periodic pre-information reference field data as it deviates from a reference signal generated by Reference Signal Generator 13 in Figure 4, hence the device taught in Figure 4 of Kuroda is used to analyze errors in retrieved the periodic pre-information reference field data to update operating parameters as a result of the analysis).

35 U.S.C. 102(b) rejection of claim 14.

Phase Comparing Circuits 14 & 15 and Amplitude Phase Equalizing Circuits 16 and 17 in Figure 4 of Kuroda are a means for determining if the retrieved periodic pre-information reference field meets a predetermined shape condition and a predetermined amplitude condition; Note: phase and amplitude determine the shape of a digital pulse.

35 U.S.C. 102(b) rejection of claims 16 and 17.

Figure 2 in Kuroda teaches an initialization pre-sync signal. The functional limitation "adjusting the readout system to maximize the resolution of the readout window so that

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the reading of the initialization data pattern will fill substantially all of the readout window” in Claim 16 imposes no structural limitation. The teachings in Kuroda and Verboom inherently are capable of optimizing read signal gain by adjusting the readout system to maximize the resolution of the readout window so that the reading of the defined data in the reference field will fill substantially all of the readout window, since the readout window is a function of synchronization, which is taught in the Kuroda and Verboom patents.

35 U.S.C. 102(b) rejection of claims 19 and 23.

Kuroda teaches the operating parameter updates include adjustments to a readout system in the data storage system so that a read signal gain is optimized (col. 7, lines 63-67 in Kuroda).

35 U.S.C. 102(b) rejection of claim 20.

Sync Pre-Signal Detector 12, Phase Comparing Circuits 14 & 15 and Amplitude Phase Equalizing Circuits 16 and 17 in Figure 4 of Kuroda are a means for wherein the operating parameter updates include adjustments to a synchronization system within the data storage system so that optimum phase synchronization can be achieved between a readout signal and a storage media synchronization signal (Note: Driver Circuit 19 is a means for synchronizing Spindle Motor 20 by controlling its rotation).

35 U.S.C. 102(b) rejection of claim 26.

Phase Comparing Circuits 14 & 15 and Amplitude Phase Equalizing Circuits 16 and 17 in Figure 4 of Kuroda are a means for wherein the operating parameter updates include adjustments to a synchronization system within the data storage system based on comparing the amplitude and shape of a readout from the periodic pre-information reference field with an expected reference readout signal from Reference Signal Generator 13 in Figure 4 so that optimum phase synchronization can be achieved between a readout signal and a storage media synchronization signal (Note: Driver Circuit 19 is a means for synchronizing Spindle Motor 20 by controlling its rotation).

35 U.S.C. 102(b) rejection of claim 31.

Kuroda teaches the operating parameter updates include adjustments to a readout system in the data storage system so that a read signal gain is optimized (col. 7, lines 63-67 in Kuroda).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. Claims 2, 9, 11, 12, 15 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda; Kazuo et al. (US 5875163 A, hereafter referred to as Kuroda).

35 U.S.C. 103(a) rejection of claims 2, 11, 15 and 27-30.

Kuroda substantially teaches the claimed invention described in claims 1, 13, 22 and 26 (as rejected above). In addition, Kuroda teaches producing a reference status data SC in Figure 4 in response to the analysis step for indicating compliance with the predetermined amplitude condition and the predetermined shape condition, respectively for the analyzed reference field.

However Kuroda does not explicitly teach the specific use of a specific makeup of the reference status data SC.

The Examiner asserts that the reference status data SC is based on phase and amplitude information from Phase Comparing Circuits 14 & 15 and Amplitude Phase Equalizing Circuits 16 and 17 in Figure 4 of Kuroda, hence it would be obvious to convert SC to any other digital form that contains the same information based on phase and amplitude information from Phase Comparing Circuits 14 & 15 and Amplitude Phase Equalizing Circuits 16 and 17.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Kuroda by including use of a specific makeup of the reference status data SC. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a specific makeup of the reference status data SC would have provided the opportunity to implement an alternative embodiment of the circuit in Figure 4 of Kuroda.

35 U.S.C. 103(a) rejection of claims 9 and 12.

Figure 4 in Kuroda teaches a Pre-Pit Signal Reproducing Circuit 11 and a Sync Pre-Signal Detector 12 for reproducing and analyzing the periodic pre-information reference field of Figure 2 in order to update operating parameters SPD, SPD1 and SPD2 for controlling rotational parameter SC; SC in Figure 4 is a rotational control parameter indicative of possible errors that exist in the periodic pre-information reference field data as it deviates from a reference signal generated by Reference Signal Generator 13 in Figure 4, hence the device taught in Figure 4 of Kuroda is used to analyze errors in retrieved the periodic pre-information reference field data to update operating parameters as a result of the analysis.

6. Claims 4-8, 18, 21, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda; Kazuo et al. (US 5875163 A, hereafter referred to as

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Kuroda) in view of Verboom; Johannes J. et al. (US 5574706 A, hereafter referred to as Nagara).

35 U.S.C. 103(a) rejection of claim 4.

Kuroda substantially teaches the claimed invention described in claim 1 and 3 (as rejected above).

However Kuroda does not explicitly teach the specific use of updates include adjustments to a readout system in the data storage system so that a read signal offset is optimized.

Verboom, in an analogous art, teaches use of updates include adjustments to a readout system in the data storage system so that a read signal offset is optimized (see Abstract, Verboom).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuroda with the teachings of Verboom by including use of updates include adjustments to a readout system in the data storage system so that a read signal offset is optimized. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of updates include adjustments to a readout system in the data storage system so that a read signal offset is optimized would have provided the opportunity to optimize readout (see Abstract, Verboom).

35 U.S.C. 103(a) rejection of claim 5.

Kuroda teaches the operating parameter updates include adjustments to a readout system in the data storage system so that a read signal gain is optimized (col. 7, lines 63-67 in Kuroda).

35 U.S.C. 103(a) rejection of claim 6.

Sync Pre-Signal Detector 12, Phase Comparing Circuits 14 & 15 and Amplitude Phase Equalizing Circuits 16 and 17 in Figure 4 of Kuroda are a means for wherein the operating parameter updates include adjustments to a synchronization system within the data storage system so that optimum phase synchronization can be achieved between a readout signal and a storage media synchronization signal (Note: Driver Circuit 19 is a means for synchronizing Spindle Motor 20 by controlling its rotation).

35 U.S.C. 103(a) rejection of claim 7.

Claim 7 is a functional limitation imposing no structural limitation. The teachings in Kuroda and Verboom inherently are capable of optimizing read signal gain by adjusting the readout system to maximize the resolution of the readout window so that the reading of the defined data in the reference field will fill substantially all of the readout window, since the readout window is a function of synchronization, which is taught in the Kuroda and Verboom patents.

35 U.S.C. 103(a) rejection of claim 8.

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Claim 8 is a functional limitation imposing no structural limitation. The teachings in Kuroda and Verboom inherently are capable of optimizing read signal gain by adjusting the readout system to maximize the resolution of the readout window so that the reading of the defined data in the reference field will fill substantially all of the readout window, since the readout window is a function of synchronization, which is taught in the Kuroda and Verboom patents.

35 U.S.C. 103(a) rejection of claims 18 and 24.

Kuroda substantially teaches the claimed invention described in claims 13, 14, 22 and 23 (as rejected above).

However Kuroda does not explicitly teach the specific use of the operating parameter being the read signal offset.

Verboom, in an analogous art, teaches the operating parameter is the read signal offset (see Abstract, Verboom).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuroda with the teachings of Verboom by including the operating parameter being the read signal offset. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that the operating parameter being the read signal offset would have provided the opportunity to optimize readout (see Abstract, Verboom).

35 U.S.C. 103(a) rejection of claim 21.

Kuroda substantially teaches the claimed invention described in claims 13 and 14 (as rejected above).

However Kuroda does not explicitly teach the specific use of the operating parameter is the frequency synchronization of the data storage device read system.

Verboom, in an analogous art, teaches the operating parameter is the frequency synchronization of the data storage device read system (col. 13, lines 12-20, Verboom).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuroda with the teachings of Verboom by including use of the operating parameter is the frequency synchronization of the data storage device read system. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of the operating parameter is the frequency synchronization of the data storage device read system would have provided the opportunity to optimize readout (see Abstract, Verboom).

35 U.S.C. 103(a) rejection of claims 25.

Kuroda substantially teaches the claimed invention described in claim 22 (as rejected above).

However Kuroda does not explicitly teach the specific use of a read clock signal being adjusted to an optimum level depending on the results of reading the reference fields.

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Verboom, in an analogous art, teaches a read clock signal is adjusted to an optimum level depending on the results of reading the reference fields (col. 12, lines 60-67, Verboom).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kuroda with the teachings of Verboom by including use of a read clock signal being adjusted to an optimum level depending on the results of reading the reference fields. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a read clock signal being adjusted to an optimum level depending on the results of reading the reference fields would have provided the opportunity to optimize readout (see Abstract, Verboom).

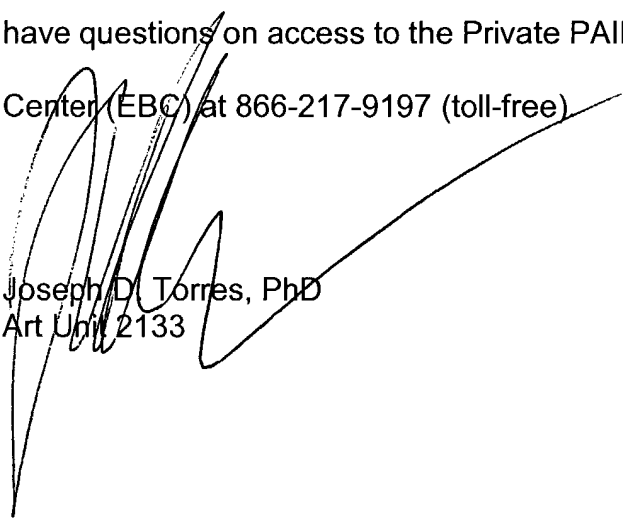
Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (703) 308-7066. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (703) 305-9595. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph D. Torres, PhD
Art Unit 2133